

CLAIM AMENDMENTS:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method comprising:

receiving, at a first input of a phase demodulator, a plurality of pulses associated with an asynchronous transfer mode signal, wherein each pulse includes data associated with the asynchronous transfer mode signal, and wherein each pulse is in a symbol period;

receiving, at a second input of the phase demodulator, an internet protocol signal;

phase modulating a first pulse of the plurality of pulses by a first shift amount based on a first plurality of bits associated with the internet protocol signal to produce a first combined asynchronous transfer mode/internet protocol signal, the first combined asynchronous transfer mode/internet protocol signal including the first pulse and the first plurality of bits associated with the internet protocol signal, wherein the first shift amount does not exceed a tolerance of the symbol period associated with the first pulse; and

communicating [[a]] the first combined asynchronous transfer mode/internet protocol (ATM/IP) signal via an optical medium, ~~wherein the combined ATM/IP signal comprises an asynchronous transfer mode (ATM) signal comprising a sequence of pulses that are pulse amplitude modulated according to first data that is distinct from second data, wherein the ATM signal is phase modulated with the second data that is based on an internet protocol (IP) signal.~~

2. (Canceled).

3. (Currently Amended) The method of claim 1, further comprising:
phase modulating a second pulse of the plurality of pulses by a second shift amount based
on a second plurality of bits associated with the internet protocol signal to
produce a second combined asynchronous transfer mode/internet protocol signal,
the second combined asynchronous transfer mode/internet protocol signal
including the second pulse and the second plurality of bits associated with the
internet protocol signal, wherein the second plurality of bits is different from the
first plurality of bits, wherein the second shift amount does not exceed a tolerance
of the symbol period associated with the second pulse, and wherein the first shift
amount is different from the second shift amount; and
communicating the second combined asynchronous transfer mode/internet protocol
signal via the optical medium.
~~wherein the phase modulating encodes multiple bits of the IP signal per pulse in the ATM~~
~~signal.~~

4.-5. (Canceled).

6. (Currently Amended) The method of claim 1, wherein the first combined
asynchronous transfer mode/internet protocol [[ATM/IP]] signal is transmitted via an [[ATM]]
asynchronous transfer mode-based network comprising a G.983-based network.

7. (Currently Amended) The method of claim 1, wherein communicating the first combined asynchronous transfer mode/internet protocol signal comprises:

transmitting the first combined asynchronous transfer mode/internet protocol [[ATM/IP]] signal via the optical medium to a first optical network termination (ONT), wherein the first optical network termination [[ONT]] does not include demodulator circuitry; and

transmitting the first combined asynchronous transfer mode/internet protocol [[ATM/IP]] signal to a second optical network termination [[ONT]], wherein the second optical network termination [[ONT]] includes demodulator circuitry[[:]], wherein the first optical network termination [[ONT]] is at a first user location and the second optical network termination [[ONT]] is at a second user location, and wherein the first optical network termination [[ONT]] is to extract the first data associated with ~~comprising an~~ the asynchronous transfer mode signal ATM stream that is uniquely associated with the first user location.

8. (Currently Amended) The method of claim 1, wherein the first combined asynchronous transfer mode/internet protocol [[ATM/IP]] signal is communicated via a passive optical network.

9-14. (Canceled).

15. (Currently Amended) An apparatus to communicate an asynchronous transfer mode (ATM) signal and an internet protocol (IP) signal, the apparatus comprising:

an optical line terminal comprising a phase modulator, the phase modulator configured to:

receive, at a first input of the phase demodulator, a plurality of pulses associated with an asynchronous transfer mode signal, wherein each pulse includes data associated with the asynchronous transfer mode signal, and wherein each pulse is in a symbol period;

receive, at a second input of the phase demodulator, an internet protocol signal;
and

phase modulate a first pulse of the plurality of pulses by a first shift amount based on a first plurality of bits associated with the internet protocol signal to produce a first combined asynchronous transfer mode/internet protocol signal, wherein the first combined asynchronous transfer mode/internet protocol signal includes the first pulse and the first plurality of bits associated with the internet protocol signal, and wherein the first shift amount does not exceed a tolerance of the symbol period associated with the first pulse,

wherein the optical line terminal communicates the first combined asynchronous transfer mode/internet protocol signal via an optical medium.

an optical line terminal (OLT), the OLT comprising a phase modulator configured to phase modulate the ATM signal based on the IP signal to produce a combined asynchronous transfer mode/internet protocol (ATM/IP) signal, wherein the ATM signal is pulse amplitude modulated with an ATM data stream, the OLT further to output the combined ATM/IP signal.

16.-24. (Canceled).

25. (Currently Amended) The method of claim 1, further comprising demodulating ~~[[a]]~~ the first combined asynchronous transfer mode/internet protocol received signal and outputting ~~[[a]]~~ an received internet protocol [[IP]] stream derived from the received first combined asynchronous transfer mode/internet protocol signal.

26. -32. (Canceled).

33. (New) The apparatus of claim 15, wherein the first combined asynchronous transfer mode/internet protocol signal is transmitted via an asynchronous transfer mode-based network comprising a G.983-based network.

34. (New) The apparatus of claim 15, wherein communicating the combined synchronous transfer mode/internet protocol signal comprises:
transmitting the first combined asynchronous transfer mode/internet protocol signal via the optical medium to a first optical network termination, wherein the first optical network termination does not include demodulator circuitry; and
transmitting the first combined asynchronous transfer mode/internet protocol signal to a second optical network termination, wherein the second optical network termination includes demodulator circuitry,
wherein the first optical network termination is at a first user location and the second optical network termination is at a second user location, and wherein the first optical network termination is to extract the data associated with the asynchronous transfer mode signal that is uniquely associated with the first user location.

35. (New) The apparatus of claim 15, wherein the first combined asynchronous transfer mode/internet protocol signal is communicated via a passive optical network.

36. (New) The apparatus of claim 15,
wherein the phase modulator is further configured to phase modulate a second pulse of the plurality of pulses by a second shift amount based on a second plurality of bits associated with the internet protocol signal to produce a second combined asynchronous transfer mode/internet protocol signal, the second combined asynchronous transfer mode/internet protocol signal including the second pulse and the second plurality of bits associated with the internet protocol signal, wherein the second plurality of bits is different from the first plurality of bits associated with the internet protocol signal, wherein the second shift amount does not exceed a tolerance of the symbol period associated with the second pulse, and wherein the first shift amount is different from the second shift amount, and wherein the optical line terminal communicates the second combined asynchronous transfer mode/internet protocol signal via the optical medium.